

REMARKS/ARGUMENTS

Claims 1-36 are active in this application, claims 37-40 having been withdrawn by the Examiner as drawn to a nonelected invention. Claim 1 has been amended to clarify that the step of passing the polymer fluid through the spinneret forms fibers, and the blown gas is then blown so as to contact the fibers. This amendment is supported by the specification as filed. No new matter has been added by these amendments.

The present invention relates to a method for electroblowing fibers. The method requires that a polymer fluid be forced through a spinneret in a first direction towards a collector located at a distance from the spinneret, to form fibers. Simultaneously, a gas is blown through an orifice that is substantially concentrically arranged around the spinneret and is blown in substantially the same first direction to contact the fibers already formed. In addition to the blowing gas, an electrostatic differential is generated between the spinneret and the collector (i.e. the spinneret and collector are caused to have different electrostatic potentials, thus resulting in an electrostatic differential between the two). Applicants have found that by using the substantially concentrically blown gas in combination with the electrostatic differential between the spinneret and collector, it is possible to generate a fluid jet stream and to provide a very large effective spin-draw ratio.

The claims stand rejected under 35 U.S.C. 102(e) over Reneker. However, Reneker does not disclose or suggest the present invention. Reneker provides a method for forming nanofiber nonwoven webs that uses a series of spaced slits to not only deliver polymer for the formation of fibers, but also for the gas being used to blow the fibers. Beginning at column 2, line 46 of the reference, a description is provided of the spaced slits through which polymer is allowed to flow to form a film, with the feeding of a pressurized gas through an adjacent slit to create enough turbulence against the film to eject the polymer in the form of a plurality of strands, which are used to generate the nonwoven mat. In other words, the

polymer is first made into a film (see column 2, lines 46-62, particularly lines 50-54), then essentially blasted apart into fibers using the applied gas (see column 2, lines 55-61). This is nowhere near the present invention as claimed, as there is no spinneret being used and there is no blowing of gas through an orifice that is substantially concentrically arranged around the spinneret. Further, the present invention as claimed requires that the spinneret directly form fibers and that the gas be blown to contact the fibers. In Reneker, the polymer is being forced through a slit to form a film, then the gas is impacted on the film to force the polymer film to be split into many fibers. The Examiner's attention is also drawn to the Figures of Reneker which show the plate like members used to generate the film of polymer which is then impacted by the blowing gas to generate fibers. These arrangements of plates to form films and direct the blowing gas into the film are thus not the same as the present invention and cannot suggest the present invention. In fact, there is nothing within Reneker to suggest forming a fiber using a spinneret, then contacting the fiber with a blowing gas, as is required by the present invention. Even though Reneker teaches application of an electric field at column 10, lines 1 et seq as a means for maintaining optimum tension in the jet and to direct the nanofibers formed along a desired trajectory or increase the "bulkiness" of the fibers through production of looped or coiled nanofibers, this does not overcome the deficiency present regarding the orifice through which the gas is blown or the formation of fibers directly from the spinneret then contacting the fibers with the blown gas.

Reneker cannot teach or suggest the present invention as the means being used to generate and spin the fibers are entirely different, with Reneker using blown gas to tear apart a sheet of molten polymer being forced through a slit into a plurality of threads, while the present invention contacts the blown gas on the already formed fibers to assist the electrostatic potential differential that is present between the spinneret and collector in forming more uniform fibers from the spinneret holes. The blown gas of the present

invention must be applied through an orifice that is substantially concentrically arranged around the spinneret hole in order to assist the production of more uniform fibers, relative to application of a turbulent flow of gas to blow apart a sheet of polymer into multiple fibers as done by Reneker. Lastly, the Examiner's attempt to classify the apparatus used by Reneker as a "spinneret-type" of structure does not comport with the conventionally accepted definition of a spinneret within the textile industry. The structure disclosed by Reneker does force a polymer melt or solution through a slit to form a film. This would more accurately be considered as an "extruder-like" type of structure. A spinneret is conventionally accepted within the textile arts as directly forming a fiber or filament by forcing the polymer fluid through a hole. Accordingly, the rejection should be withdrawn.

The claims also stand rejected under 35 U.S.C. 102(e) over Kim et al. Applicants note that the Kim et al reference has an effective prior art date of November 20, 2002 (the filing date of the PCT application from which the Kim et al reference claims priority; since the PCT application was filed in Korean but published in English, it is Applicants representative's understanding that the effective prior art availability date for the reference is thus the PCT filing date). Applicants provide herewith a Declaration under 37 C.F.R. 1.131 showing that Applicants conceived their invention prior to the effective date of the Kim et al reference, as established by the Phase I Proposal submitted to the Department of the Army Small Business Innovation Research (SBIR) Program in August 2002.¹ The proposal describes the present invention of combining electrospinning with melt blowing in sufficient detail to establish that the present inventors had conceived the present invention prior to the

¹ According to the Army SBIR program office, such proposals are not publically available, and at most an abstract would be published only after the date of contract award. Exhibit B of the attached Declaration shows that as of November 11, 2002, the Army had approved the proposal for negotiation and possible contract award, and this date is less than one year prior to the filing date of the present application, this establishes that such abstract publication would not have occurred more than one year prior to the present application filing date, thus neither the proposal nor abstract would be considered as prior art against the present application.

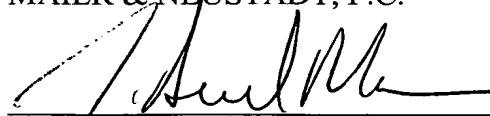
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Kim et al effective date, thus removing the reference as available prior art. Accordingly the rejection should be withdrawn.

Applicants submit that the application is now in condition for allowance and early notification of such action is earnestly solicited.

Respectfully submitted,

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